

Scenario A:

Modem: <https://www.newegg.com/netgear-cm1000-100nas-cable-modem/p/N82E16825124028>

Cost: \$200

Reasoning: This is a fairly low cost, no-frills stand-alone modem. With DOCSIS3.1 it has the most up to date DOCSIS it is more than capable of handling the home's 200 Mbps download and a 50 Mbps upload service . Also it does not have Wi-Fi build in so this will reduce installation time because we don't need to disable the built in Wi-Fi so it doesn't conflict with the Mesh Wi-Fi network we will be installing.

Router/Mesh Wi-Fi Network: <https://www.newegg.com/asus-bq16-pro-mesh-wifi-system/p/N82E16833320597>

Cost: 849.99 Sale Price 1099.99 Normal

Reasoning: This Wi-Fi Setup is Future proof for a good long while. With the Latest WI-FI 7 which has more range and less dead spots this setup with be overkill for the 1600 square foot home as it can cover more than 8000 square feet. But as we require reliability I would always go for overkill. The speeds on Wi-Fi 7 well exceed the 200Mbps down and 50mbps up. Each router also has 5 ethernet ports so the printer can be installed next to it downstairs and for future growth. These routers are also backwards compatible to Wi-Fi 4 for older devices to still be able to connect if they are not compatible with WI-FI 7. They also have built-in security with WPA3 Enterprise encryption, VPN capability and WPS.

Printer Cable/Modem cables: [Link](#)

Cost: \$6

Reasoning: These Cat 8 cables will be both aesthetically pleasing and are future proof as they are the latest standard and can support up to 40G connections. Far more than will ever be needed in this setup.

In-wall cable: [Link](#)

Cost: \$19

Reasoning: To ensure great connectivity both upstairs and downstairs, I have gone with the hardwired approach for the mesh network. I would run this from the downstairs router up to the upstairs router to ensure the best streaming and connectivity possible.

Total Cost: \$1350 Far under the \$2500 Budget for a Wi-Fi system with will last for a very long time and still have room to grow with 4 ethernet ports upstairs and 3 spare ports downstairs.

Scenario B:

Cable Modem/WIFI 6 Router: [Link](#)

Cost: \$225

Reasoning: This is a great solution for someone trying to keep costs low and would be more than enough to support their 100Mbps down and 25 Mbps up connection with DOCSIS 3.1. Can handle connections up to 2GBPS. It can also cover over 2000 SQFT and up to 25 concurrent Devices for all the wireless devices in the house. It also has 4 1 Gig Ethernet ports for the 4 Wired connected devices the specifications require. As the supply to the house is only 100MBPS we don't need to worry about the connection being throttled by the 1gb ports as it is 10x more than what they have. This would also get rid of the need to pay the \$5 WIFI charge so It would pay for itself in a few years!

Nic Card Upgrades: [Link](#)

Cost: \$63 each Total cost: \$126

Reasoning: This is a Solid Nic Upgrade for any PC. It supports up to 10G so far exceeding anything these guys have in their network and this way if they upgrade later down the line their computers will be ready. They are also PCI-E 8X and 16X for better comparability.

Cabling : [Link](#)

Price: \$16 Each Total Price: \$64

Reasoning: I went with the 100Ft Cat 6 cabled for the 4 devices they wanted hardwired. This should be more than enough to reach anywhere in the apartment and offer the flexibility that if they ever want to rearrange the apartment the cables will reach anywhere they need.

Total Project cost: \$415